

# HYDREX<sup>®</sup>

## UNDERWATER TECHNOLOGY

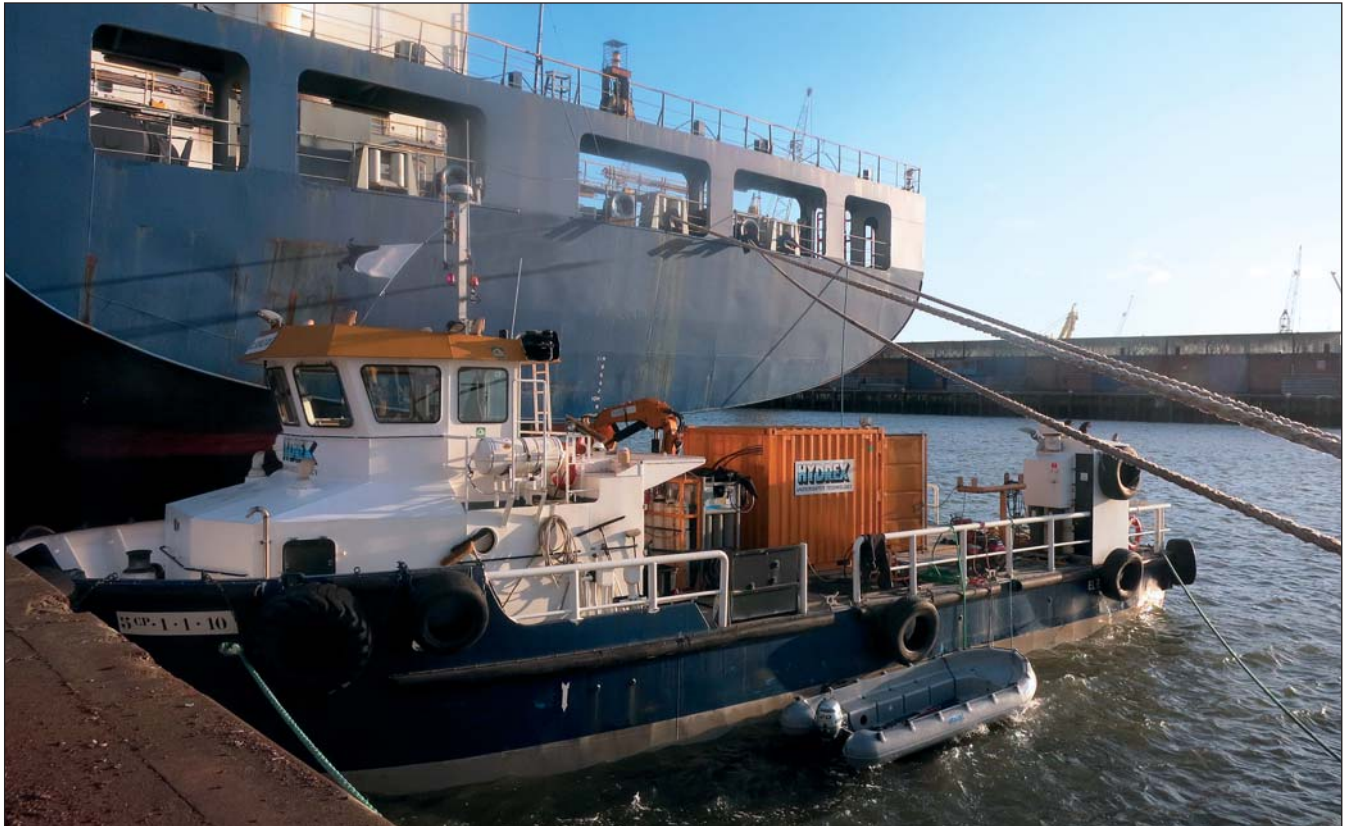
Magazine

Number 239



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# Hydrex Rotterdam ready to assist you



**To enable a fast mobilization throughout the entire Rotterdam port without delaying a ship's commercial operations, Hydrex dive support vessels are stationed in Rotterdam.**

Since the opening of our Rotterdam office these workboats have proved to be a valuable asset during a

variety of operations in the port. They are fully equipped with hydraulic cranes, winches, a dive spread and control room.

This allows Hydrex to offer simple maintenance operations as well as repairs on all parts of the underwater ship propulsion system and the hull. Hydrex operations are class approved

and carried out alongside or at anchorage while commercial activities continue without disruption.

Feel free to contact the Rotterdam office if you want to find out how we can assist you and your vessel.

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# Editorial



**W**elcome to the last Hydrex magazine of 2016. We wish you all the best for the Holiday season and the coming year.

The past year has been a very exciting one. We finalized the construction of the large new office space and total refurbishment of all existing buildings of our Antwerp headquarters. A new workshop was also added to the premises and the quay space available to us was extended. All these elements were part of a large expansion of the logistic possibilities of our headquarters. This allows us to offer our services even faster to our customers.

In March Hydrex Rotterdam officially opened. We have been servicing vessels in Rotterdam for a very long time and with the growing demand for fast, high quality underwater repairs in this area, this was only a logical step for us. To enable a fast mobilization throughout the entire Rotterdam port without delaying a ship's commercial operations, dive support vessels are stationed in Rotterdam.

Our diver/technician teams have also been very busy throughout the entire year. A good example of this is the recent insert repair that was performed in Uruguay. An oil tanker suffered a hole in the shell plating of

her ballast tank and we were contacted to provide an underwater solution.

Rest assured that we will be ready to assist you 24/7 in 2017, as we have been since Hydrex was founded in 1974. Do not hesitate to call us when you need any repair or maintenance work performed. We have the means and knowledge to provide you with a fast, underwater solution.

Hydrex founder  
Boud Van Rompay



## ISO 9001 certified

Underwater services and technology approved by:



To receive a free copy, e-mail to:  
[hydrex@hydrex.be](mailto:hydrex@hydrex.be)

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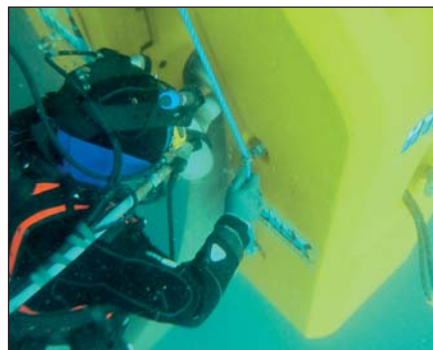
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# Hydrex ready to assist you during the Holiday season

**T**he Holiday season is upon us and most people are looking forward to a well-deserved break. At Hydrex we remain at your service throughout the entire end of the year period, 24/7.

A problem with your vessel can occur at any moment during the year, so we know how important it is to have someone you can rely on *anytime, anywhere.*



*Hydrex will be ready to assist you throughout the entire Holiday season.*



*Hydrex workboat during operation.*

If your vessel is in need of any type of underwater service, you are very welcome to mail us or give us a call. After an evaluation of the request we can quickly let you know whether an underwater solution is possible. We will give you a fast and clear answer to your questions.

Our offices in Antwerp, Rotterdam, Algeciras and Tampa are ready to assist you together with a network of agents and local support bases. We are able to mobilize quickly to locations around the globe.

Any question or enquiry can be send to [hydrex@hydrex.be](mailto:hydrex@hydrex.be). You can also call us 24/7 at +32 3 213 53 00.

We wish you all the best for the New Year and hope you can sail safely and without trouble. ■



*Harsh conditions do not stop our dive teams.*

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# Insert installation in Uruguay prevents loss of contract

**A** 277-meter oil tanker suffered a hole in the shell plating of her ballast tank. We were contacted by the owner to provide an underwater solution that would allow the vessel to keep her schedule. A team of our diver/technicians therefore mobilized to Punta Del Este, Uruguay to perform on-site repairs.

The corrosion damage was situated in the bottom plating of the ballast tank, underneath the sounding pipe. The tanker's tight schedule only allowed for a temporary repair at this time. Because of the bad weather conditions and resulting fast current, no underwater welding work could be performed. Our technical department proposed a repair plan that incorporated both the limited time frame and the meteorological circumstances.

## Fast temporary repair prevents drydocking

After our team arrived in Punta Del Este, where the vessel was at anchorage, they performed a detailed inspection of the damage. Next a doubler plate was installed. This was done using a method that did not require any welding work on the waterside of the shell plating.

This repair was carried out very fast. It allowed the tanker to keep his schedule. The classification society agreed to let the vessel sail until her next scheduled drydocking, if regular inspections were done to the affected area.



*Workboat next to oil tanker in Uruguay.*

While this repair helped to evade going off hire, the charterer requested the owner to find a permanent solution to avoid the required

inspections. Once again we were asked to look for a way to help the owner.



*Installed doubler plate on tanker.*



## Hydrex US ready to mobilize immediately



**H**ydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean.

All staff members of the Hydrex office in Clearwater undergo stringent training at the Hydrex headquarters in Antwerp. They can carry out both simple and complex high quality jobs even in the harshest of circumstances.

Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater repair as well as maintenance services are done while the vessel is afloat. This eliminates the need to drydock.

All used methods are fully approved by all major classification societies.

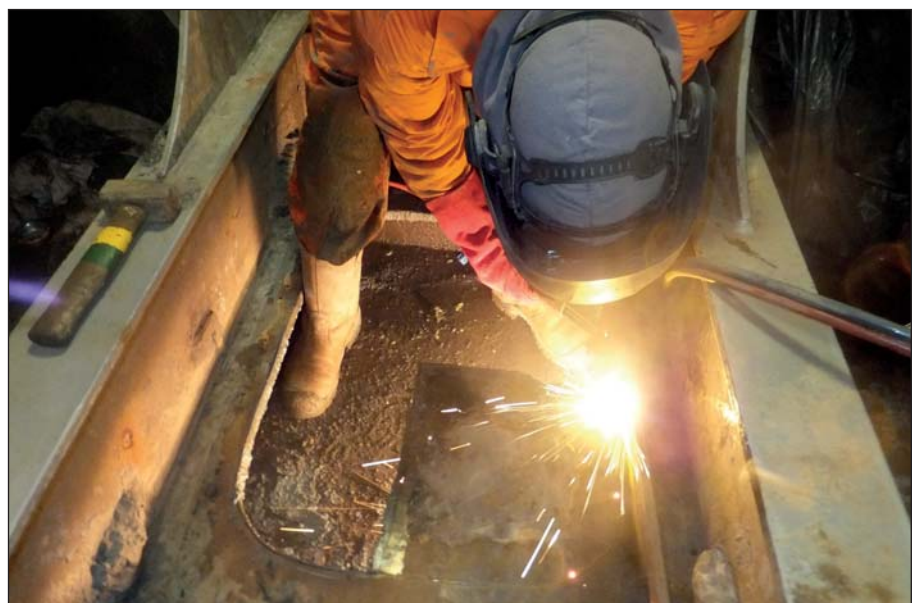
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*Cofferdam lowered into the water, ready for installation.*



*Hydrex technician cutting away the damaged shell plating.*



*Removing the corroded plating.*



*Hydrex welder working on the insert plate.*

## Permanent underwater solution

Thanks to the quick doubler operation carried out by our divers, the vessel could keep on sailing until a larger time frame became available. This was needed to plan the permanent repair that would involve the installation of a new insert plate.

Three months after the doubler plate had been installed, a Hydrex team mobilized to Punta Del Este again. They arrived on-site with a work-boat, all the needed equipment and the new insert plate that measured 860 mm x 600 mm.

The repair operation started with the removal of the doubler plate and the installation of a cofferdam on the waterside of the damaged area. This cofferdam had been modified to fit the shape of the hull by using the measurements taken by our team during the first part of the operation.

The team then cut away the affected area of the bottom plating. Next they fitted the insert plate, which was welded following the Hydrex class-approved procedure for insert plates, using a full penetration weld.

An independent inspector carried out ultrasonic testing and the repair



*Independent ultrasonic testing.*

## Permanent in-water rudder repairs now possible without drydocking



**H**ydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers. Therefore this new service is now available world-wide.

Major defects on rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial operations can continue. Steel repairs and replacements can be performed and pintle and bushing defects can be solved without the loss of time and money associated with drydocking.

The equipment can be mobilized within hours to any port in the world and is available for rapid mobilization from the Hydrex headquarters in Antwerp.

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## Hydrex under-water inspections



**U**nderwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and the underwater gear of their vessels. An informed decision can then be made concerning any required follow-up action. Catching problems early can save you much money in the long run.

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule.

With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that will increase fuel usage due to the drag or inefficiency created by the damaged or affected area. The data gathered can then be used to see if actions are required.

Our diver/technicians are trained for a wide range of operations and they can carry out the inspections in port or at anchor anywhere in the world.



*New insert fitted.*

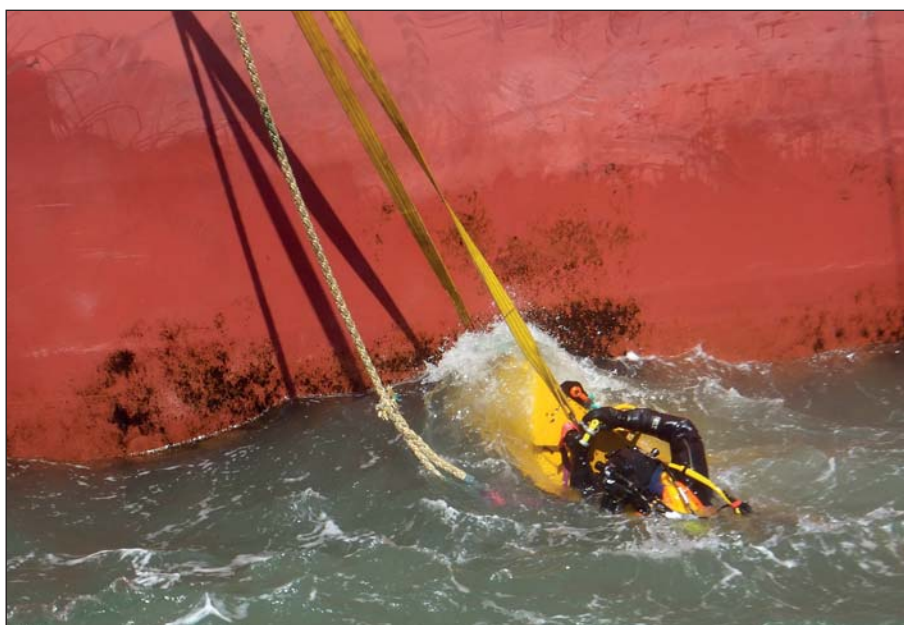


*Fully welded insert.*





*Full penetration weld seem in progress on new insert plate.*



*Hydrex diver/technician during removal of the cofferdam.*

was approved by the classification surveyor who was present during the operation. The divers then removed the cofferdam, concluding the repair.

## Conclusion

During both parts of the operation the weather conditions were terrible, but we were able to find a way around this. By performing a very fast temporary repair that did not require any underwater welding work, we bought the owner of the tanker the time needed to find a more suitable date for the second, permanent part of the repair.

Diving conditions were still not ideal during the second phase of the operation, but this did not prevent our team from securing the cofferdam and installing the new insert. Our divers have gone through extensive training, both in-house and external to make sure they can perform the task at hand in challenging circumstances. They do this without compromising the high safety and quality standards we are known for. ■

If you have received this magazine at the wrong address or if your company is going to move, please let us know.

You can  
contact us at:  
**hydrex@hydrex.be**  
or at  
**+ 32 3 213 53 00**

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# High quality in-water ship rep

## **Permanent insert repairs**

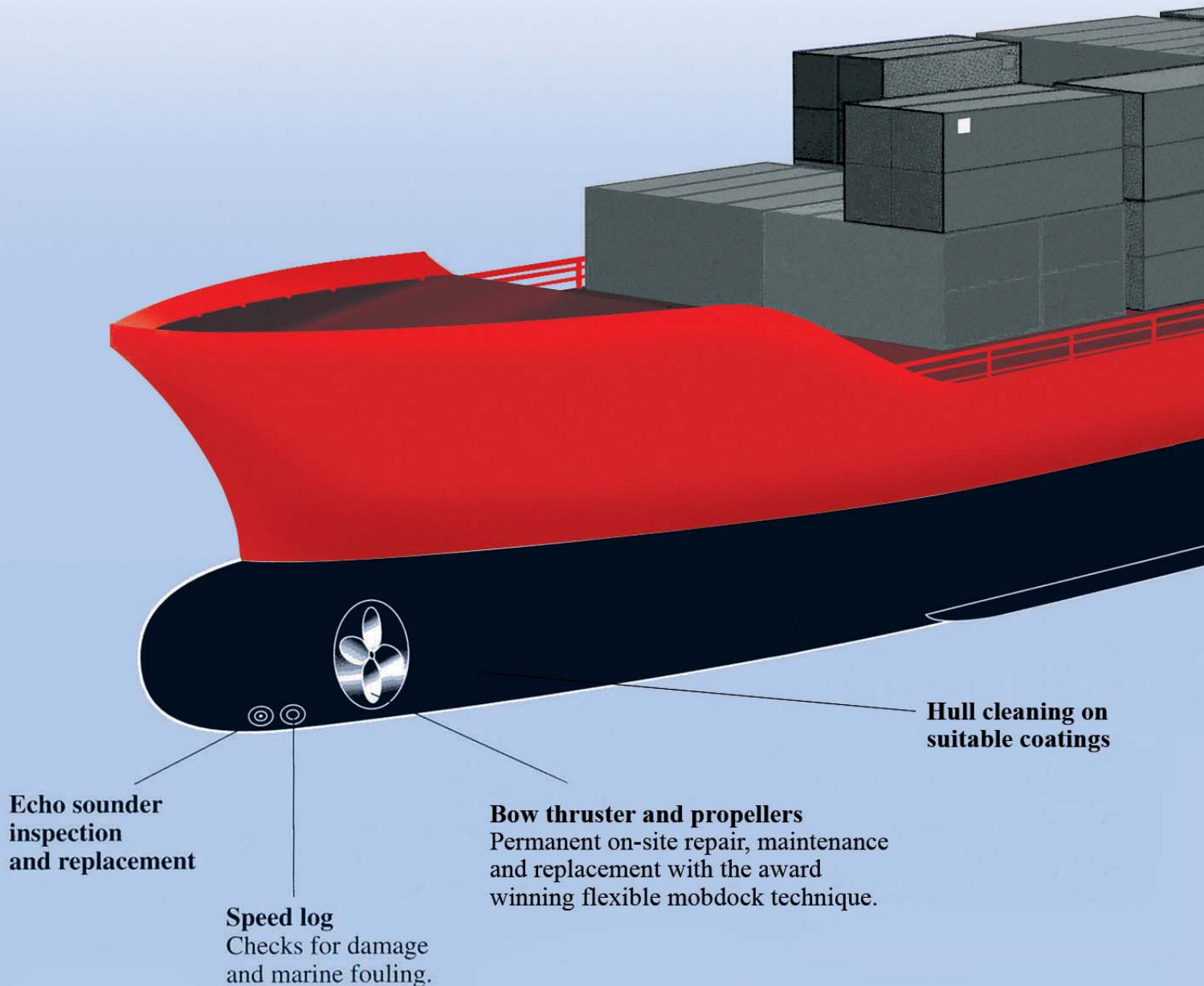
Specialist class approved insert repair work carried out and on a permanent basis. Providing a real alternative to drydock.

## **Emergency repairs**

Fast response emergency repairs worldwide.

## **Inwater video inspections**

Professional video surveys provide a reality of the problem and enable owners and classification surveyors to directly diagnose any problems.

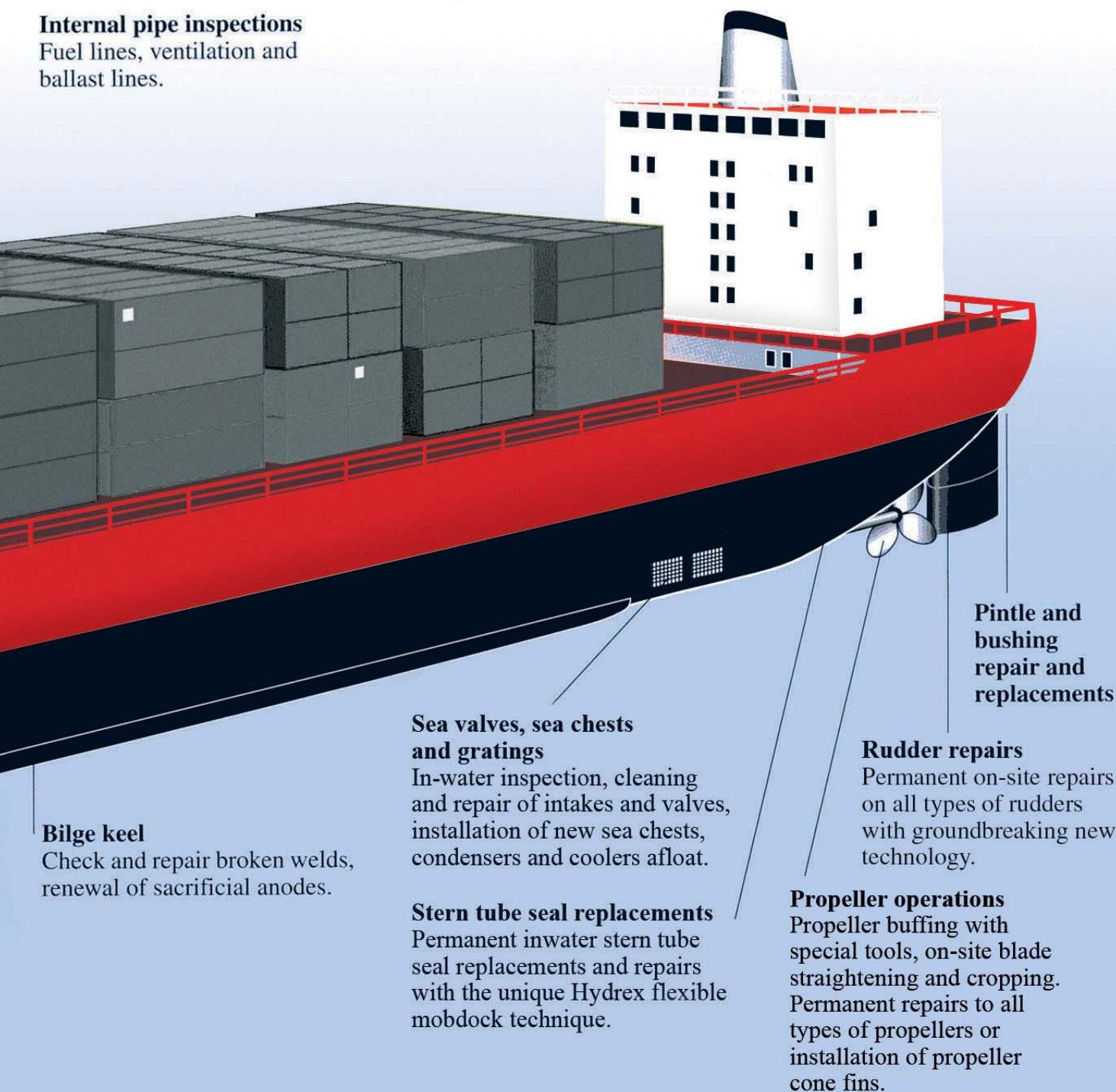




# air and fuel saving services

## Internal pipe inspections

Fuel lines, ventilation and ballast lines.



### Bilge keel

Check and repair broken welds, renewal of sacrificial anodes.

### Sea valves, sea chests and gratings

In-water inspection, cleaning and repair of intakes and valves, installation of new sea chests, condensers and coolers afloat.

### Stern tube seal replacements

Permanent inwater stern tube seal replacements and repairs with the unique Hydrex flexible mobdock technique.

### Pintle and bushing repair and replacements

### Rudder repairs

Permanent on-site repairs on all types of rudders with groundbreaking new technology.

### Propeller operations

Propeller buffing with special tools, on-site blade straightening and cropping. Permanent repairs to all types of propellers or installation of propeller cone fins.

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## KEEPING SHIPS IN BUSINESS

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# Fast worldwide repairs keep your propeller spinning

**W**hen damage to propellers occurs due to impact with ice and other debris, we will assist you, even if the damage is quite extensive. Our teams are ready to mobilize immediately to any location around the world.

A ship with bent or cracked propeller blades might experience severe vibrations while sailing. The classification society might demand a repair before the vessel is allowed to sail on. By straightening the blades or cropping them, we can restore the propeller's balance, resulting in a green light from the class for the vessel.

A propeller modification can easily be combined with any other maintenance or repair operation that needs to be carried out on the vessel. This allows a vessel to keep to its schedule.



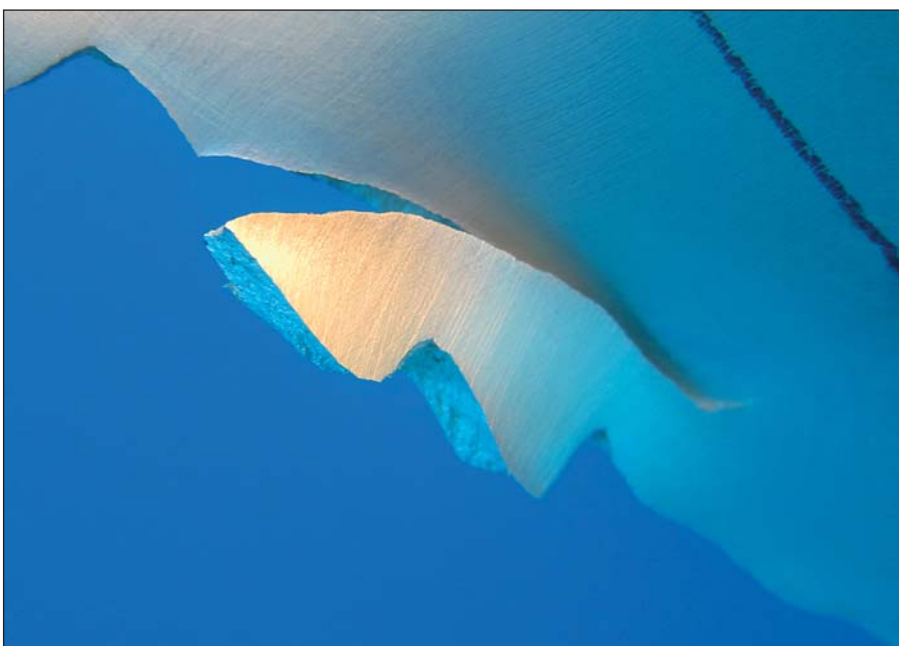
*Hydrex can cold straighten a bent propeller blade with in-house developed equipment.*

Prior to a propeller repair, a detailed underwater inspection is carried out by our divers. They are certified to make a full assessment of the condition of the propeller. The exact dimensions and position of the damage can then be communicated

to the technical department supervising the operation. This is essential because the calculations need to be perfectly accurate to achieve an ideal result with the repair. Hydrex team members are not only divers, but have experience in dealing with all kinds of different situations and circumstances. They are trained to think with the people in the technical department. As diver/technician experts, they will assist in working out the best solution and have the skill and experience needed to implement the theoretical solutions that have been worked out. This allows us to carry out all steps of a propeller operation in a very short time frame.

## **Propeller blade straightening and cropping**

By taking advantage of the in-house developed cold straightening technique, damaged blades can be straightened underwater, allowing the ship

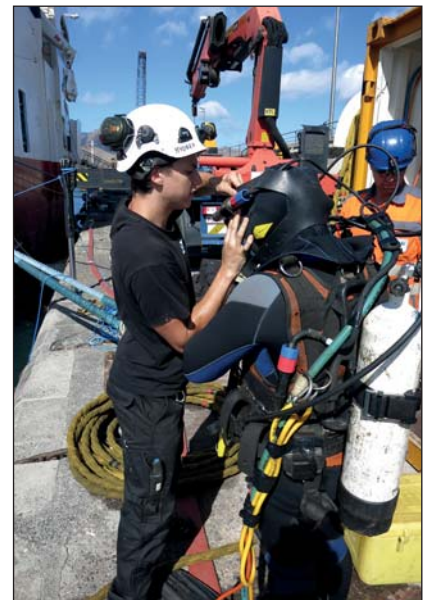


*Heavily damaged propeller blades can be cropped to prevent the damage from spreading and to restore balance to the propeller.*





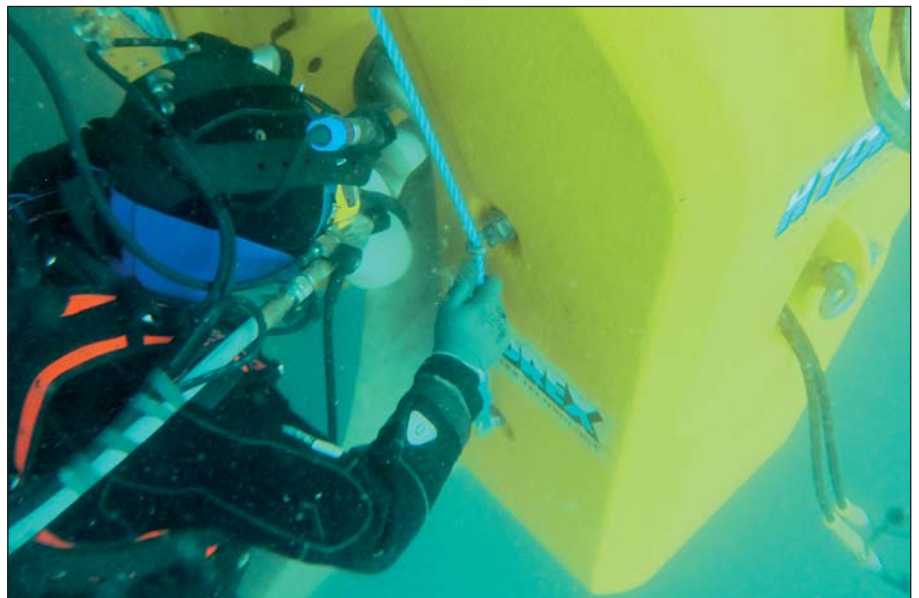
*Hydrex propeller straightening equipment arriving on-site.*



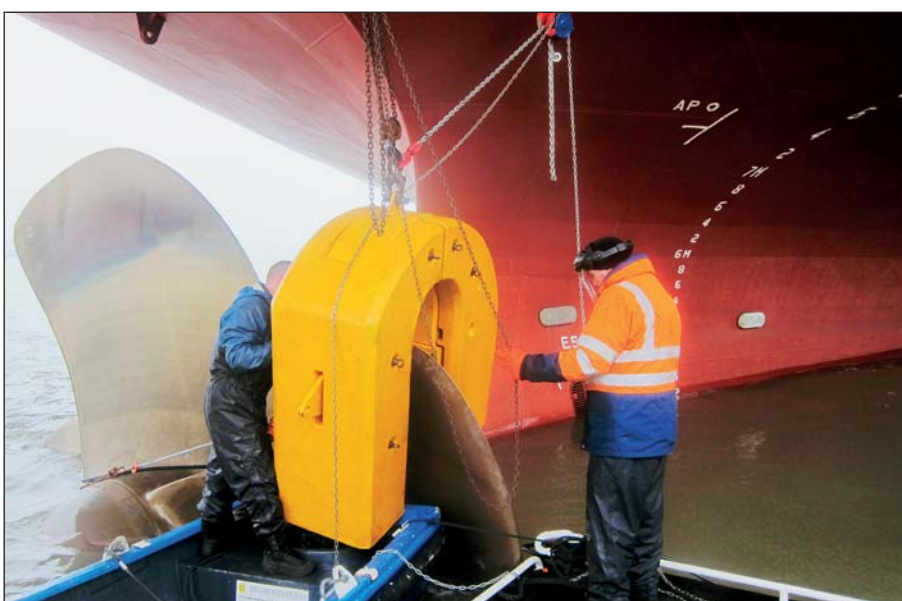
*Hydrex diver getting ready for underwater operation.*



*Afloat propeller blade cropping.*



*Underwater straightening of a bent propeller blade.*



*Afloat straightening in Rotterdam.*



*Cropping a propeller blade underwater.*





*Cropping a damaged blade can restore a propeller's balance.*



*A cropped propeller blade is polished to minimize the loss of efficiency.*

to return to commercial operations without the need to drydock. Optimum efficiency of the propellers can be restored by bringing the blades back close to their original form. The cold straightening machine has been in use for quite some time now but the Hydrex research department has been looking into ways to enhance the technique even further to improve our services. New models of the straightening machine are regularly put into service.

If cold straightening is not an option, the affected area on the blade will be cropped to restore the hydrodynamic balance. This is done to achieve the greatest possible efficiency for the vessel. This kind of repair is carried

out using the propeller blade cutting equipment that was also developed by our R&D department. First a detailed underwater inspection is performed by one of our teams to obtain the exact parameters of the damage which are then used for a detailed calculation of the ideal cutting line. This allows the customer to know in advance what the result of the operation will be.

We also have the tools to carry out detailed crack inspections on propeller blades. An informed decision can then be made concerning any required follow-up action. Catching problems early can save much time and money.

## **Restoring optimum propeller performance**

Hydrex not only offers repair services, but can also help customers when they have the need for preventive or other special custom projects. For example, preventive modifications were made in Bremerhaven to the blades of three ice-going sister vessels. When several of this customer's vessels suffered damage and the propellers needed cropping after the winter, the owner wanted to find a way to prevent this from occurring to his other container vessels. When the next winter promised to be equally harsh, he wanted to give the blades extra strength and make them less susceptible to damage from ice or other debris. This was done by modifying the blades to a very specific design that made them less prone to damage while keeping the propeller's performance optimum. The operation was performed in close communication with the manufacturer of the propellers.

By performing these repair and maintenance operations underwater and on-site we save ship owners precious time and money. It allows ships to return to commercial operations without the need to drydock. ■



*Hydrex truck and equipment on-site.*



# Stern tube seal repairs



**U**sing our flexible mobdock method to create a dry underwater environment, we have carried out stern tube seal repairs and replacements underwater for some years now in cooperation with OEMs.

This technology brings drydock

conditions to the ship rather than having to take the ship to drydock, saving a considerable amount of time and money in doing so.

This class accepted method is performed by our diving teams under our warranty. It can be used while the ship is carrying out its

usual cargo or other commercial operations in port.

Visit the special stern tube seal repair section on our website for more information and examples of the many seal repairs we have performed in recent years.



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# Keeping ships in business

**H**ydrex offers turnkey underwater repair solutions to ship-owners wherever and whenever they are needed. Hydrex's multi-disciplinary team will help you find the best solution for any problem encountered with your ship below the water line. We will immediately mobilize our diver/technicians to carry out necessary repair work without the need to drydock.

Hydrex has a long track record of

performing complex permanent underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. By creating drydock-like conditions around the affected area, our diver/technicians can carry out these operations in port or at anchor.

All the projects we undertake are engineered and carried out in close cooperation with the customer and any third party suppliers, relieving

the customer of all the hassle of coordination, planning and supervision.

Headquartered in the Belgian port of Antwerp, we have offices in Rotterdam, Tampa (U.S.A) and Algeciras (Spain).

All Hydrex offices have fully operational fast response centers where an extensive range of state-of-the-art equipment is available at all times.



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